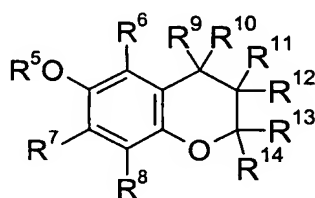


What is claimed is:

- 1) A process for preparing an ester F of a polyalcohol A with at least one ethylenically unsaturated carboxylic acid B, comprising the steps of
 - a) reacting a polyalcohol A with at least one ethylenically unsaturated carboxylic acid B in the presence of at least one esterification catalyst C and at least one polymerization inhibitor D, and also, if appropriate, a solvent E which forms an azeotrope with water, to form an ester F,
 - b) if appropriate, removing at least a portion of the water formed in a) from the reaction mixture, b) being effected during and/or after a),
 - f) if appropriate, neutralizing the reaction mixture,
 - h) if a solvent E has been used, removing the solvent if appropriate by distillation, and/or
 - i) stripping with a gas inert under the reaction conditions,

which comprises using, as the polymerization inhibitor D, at least one 6-chromanol derivative of the formula (III)



where

R^5 , R^6 , R^7 , R^8 , R^9 , R^{10} , R^{11} , R^{12} , R^{13} and R^{14} are each independently hydrogen, C_1 - C_4 -alkyl, C_1 - C_4 -alkyloxy or C_6 - C_{12} -aryl and

R^5 is additionally C_1 - C_4 -alkylcarbonyl, C_1 - C_4 -alkyloxycarbonyl, C_6 - C_{12} -arylcarbonyl or C_6 - C_{12} -aryloxycarbonyl,

and the radicals mentioned may each optionally be interrupted by one or more oxygen atoms and/or sulfur atoms and/or one or more substituted or unsubstituted imino groups, or be substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles,

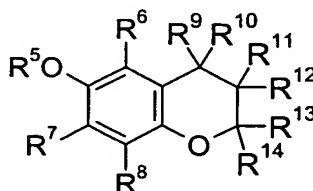
and R¹³ is additionally chlorine.

2) A process for preparing a crosslinked hydrogel, comprising the steps of

- 5 a) reacting a polyalcohol A with at least one ethylenically unsaturated carboxylic acid B in the presence of at least one esterification catalyst C and at least one polymerization inhibitor D, and also, if appropriate, a solvent E which forms an azeotrope with water, to form an ester F,
- 10 b) if appropriate, removing at least a portion of the water formed in a) from the reaction mixture, b) being effected during and/or after a),
- f) if appropriate, neutralizing the reaction mixture,
- 15 h) if a solvent E has been used, removing the solvent if appropriate by distillation, and/or
- i) stripping with a gas inert under the reaction conditions,
- 20 k) polymerizing the reaction mixture from one of stages a) to i), if passed through, with, if appropriate, additional monoethylenically unsaturated compounds N, and also, if appropriate, at least one further copolymerizable hydrophilic monomer M in the presence of at least one free-radical initiator K and, if appropriate, at least one graft base L,
- 25 l) if appropriate, postcrosslinking the reaction mixture obtained from k),
- m) drying the reaction mixture obtained from k) or l) and
- 30 n) if appropriate, grinding and/or sieving the reaction mixture obtained from k), l) or m),

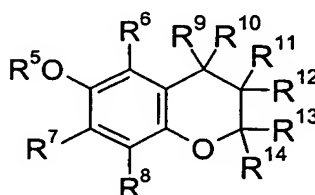
which comprises using, as the polymerization inhibitor D, at least one 6-chromanol derivative of the formula (III)

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as defined in claim 1.

- 3) The process according to claim 1 or 2, wherein R^5 and R^9 to R^{12} in formula (III) are each hydrogen, R^6 , R^7 and R^8 are each independently hydrogen or methyl, and R^{13} and R^{14} are each methyl.
- 4) The process according to claim 1 or 2, wherein at least one 6-chromanol derivative is selected from the group consisting of 2,2,5,7,8-pentamethyl-6-chromanol, 2,2,5,7-tetramethyl-6-chromanol, 2,2,5,8-tetramethyl-6-chromanol, 2,2,7,8-tetramethyl-6-chromanol, 2,2,5-trimethyl-6-chromanol, 2,2,7-trimethyl-6-chromanol and 2,2,8-trimethyl-6-chromanol.
- 5) The process according to any of the preceding claims, wherein at least one of reaction steps a) and b) is carried out in the presence of an oxygenous gas.
- 6) The process according to any of the preceding claims, wherein the polyalcohol A is selected from the group consisting of trimethylolbutane, trimethylolpropane, trimethylolethane, neopentyl glycol, neopentyl hydroxypivalate, pentaerythritol, glycerol, 1,2-ethylene glycol, 1,2-propylene glycol, 2-ethyl-1,3-propanediol, 2-methyl-1,3-propanediol, hydroquinone, bisphenol A, bisphenol F, bisphenol B, 2,2-bis(4-hydroxycyclohexyl)propane, 1,1-, 1,2-, 1,3- and 1,4-cyclohexane-dimethanol, 1,2-, 1,3- or 1,4-cyclohexanediol, but-2-ene-1,4-diol and but-2-yne-1,4-diol, each of which may optionally be alkoxylated.
- 7) The process according to any of the preceding claims, wherein, instead of a carboxylic acid B, a C_1 - C_4 -alkyl ester of a carboxylic acid B is used and, instead of an esterification catalyst C, a transesterification catalyst.
- 8) A crosslinked hydrogel obtainable by the process according to any of claims 2 to 6.
- 9) A crosslinked hydrogel comprising at least one hydrophilic monomer M in copolymerized form, crosslinked with a reaction mixture comprising an ester F, as obtainable by the process according to any of claims 1 to 6.
- 10) A crosslinked hydrogel comprising at least one 6-chromanol derivative of the formula (III),



as defined in claim 1.

- 5 11) The use of the crosslinked hydrogel according to any of claims 7 to 9 in hygiene articles, packaging materials and in nonwovens.
- 10 12) The use of reaction mixtures from the preparation of a (meth)acrylic ester of a polyalcohol or of a purified (meth)acrylic ester, each of which comprise at least one 6-chromanol derivative of the formula (III) as defined in claim 1, as free-radical crosslinkers of water-absorbent hydrogels.
- 13) The use of 6-chromanol derivatives of the formula (III) as defined in claim 1 as the stabilizer in the preparation of (meth)acrylic esters.
- 15 14) The use according to claim 12, wherein the (meth)acrylic esters are used as free-radical crosslinkers in hydrogels.
- 15) A substance mixture comprising
- 20 at least one 6-chromanol derivative of the formula (III) as defined in claim 1 and
- at least one stabilizer selected from the group consisting of phenols, quinones and hydroquinones, N-oxyls, aromatic amines, phenylenediamines, sulfonamides, oximes, hydroxylamines, urea derivatives, phosphorus
- 25 compounds, sulfur compounds and metal salts.
- 16) A substance mixture according to claim 14, comprising
- 30 at least one 6-chromanol derivative of the formula (III) as defined in claim 1 and
- at least one stabilizer selected from the group consisting of phenothiazine, hydroquinone, hydroquinone monomethyl ether and hypophosphorous acid.